PEO-STRI-14-W082
25 February 2015

Statement of Work

for

Technology Refresh of the Voice and Video Control and Edit Component (VVCEC) of the National Training Center – Instrumentation System (NTC-IS)

U.S. Army Program Executive Office for
Simulation, Training, and Instrumentation (PEO STRI)
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REVISION AND CHANGE RECORD

REVISION HISTORY	DATE	Change	Originators
Initial	25 Feb 2015	NA	R. Peters

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STATEMENT OF WORK
FOR
TECHNOLOGY REFRESH OF THE VOICE AND VIDEO CONTROL AND EDIT COMPONENT (VVCEC) AT THE NATIONAL TRAINING CENTER, FORT IRWIN, CALIFORNIA

1.0 SCOPE

This Statement of Work (SOW) defines the effort required for the technology refresh of the , the Voice and Video Monitoring Component (VVMC) and the WiMAX portion of the Range Communications Component (RCC) of the National Training Center – Instrumentation System (NTC-IS). The VVCEC includes a sophisticated voice and video control, collection, storage, and digital editing capability. This component consists of edit stations, After Action Review (AAR) preparation stations, digital video editing stations, and storage array which provide multi-media digital voice and video products that are reviewed in near real-time so that AARs can be quickly presented following a mission segment. Another element of the VVCEC is a Closed Circuit Television (CCTV) network provided for battle and AAR presentation viewing. The VVMC consists of the microwave transmission links that transports the video and audio feeds between the Mobile AAR vans, Mobile Video Units (MVUs) and the two remote sites on Tiefort and Granite Mountains. At the remote sites, the signal transitions to the Fiber Optic Network (FON) which connects to Building 990. The WiMAX portion of the RCC consists of three (3) instrumented trailers that are equipped with a head-end equipment package that facilitates the capability for a mobile data link via fiber optic networks connecting the down range Forward Operating Base (FOB) Tactical Operations Centers (TOC's) to be connected to the local NTC Operations Group 52 Infantry Division (ID) network. The VVCEC is a component of the Core Instrumentation Subsystem (CIS), the VVMC and the WiMAX portion of the RCC are components of the Range Monitoring and Communications Subsystem (RMCS).

1.1 Background

1.1.1 Existing VVCEC

1.1.1.1 Audio and Video Servers

The Avid servers are used in conjunction with the Avid edit and capture workstations. The servers have software and management tools used to maintain the video network for proper data transfer and connections to additional storage. This system incorporates AAR and MVU missions ingested from the field and sent back to Building 990. The Interplay Capture Server automatically checks into Interplay and media is instantly available in Unity shared storage. The Real-time video editors can then use the footage for hero tapes and take home packages. Notification was received that Windows 2003 operating system will no longer be supported after July 2015. Since these servers are not capable of supporting the next version of operating system software, the hardware will have to be replaced with servers containing an upgraded supportable operating system**.** The Avid servers running Windows 2003 will become an information assurance issue in July 2015.

1.1.1.2 VVCEC Editing Suite

The VVCEC editing suite of equipment is approaching end-of-life and the editing software will need to be upgraded to the latest version. This component consists of digital editing stations, AAR prep stations, and duplicating stations which provide multi-media digital voice and video products that are reviewed in near real-time so that AARs can be quickly presented following a mission segment. This editing capability is a key factor in supporting state of the art AAR products to insure the United States Army has the best training tools available.

1.1.1.3 CCTV

The CCTV Network is a modulated RF Based video and audio distribution system that provides the capability to distribute video programming of multiple channels to key command elements in the local area. The system is currently capable of providing up to 47 individual channels for viewing in various locations via a tuner device. Twenty eight (28) of these channels support the National Training Center (NTC) Operations Group for viewing various operations such as AAR presentations in progress, battle coverage video, International News Network (INN), Cable News Network (CNN), and other video products generated during training events at NTC. The remaining 19 channels are provided by a commercial television agency that is combined into the RF based system for a total of 47 viewable channels. There are currently 114 CCTV connections to distribute video and audio throughout Building 990 and 988. The system is currently using 84 of the available connections. The connections are located as follows:

1. Room 123, Building 990 has one input feed that supports 28 CCTV connections that feed Building 990 first floor rooms and Operations Control Center (OCC)
2. Room 167, Building 990 has one input feed that supports 36 CCTV connections that feed the Building 990 TAFS and Division Tactical Operations Center (DTOC)
3. Room 241, Building 990 has one input feed that supports 34 CCTV connections that feed Building 990 second floor rooms
4. Building 988, has one input feed that supports 16 CCTV connections

Figure 1: B990_CCTV Diagram - Channel Inputs and Outputs located in Appendix A depicts the current channels being ingested and combined for distribution in the current system. Figure 2: CCTV Distribution, located in Appendix A depicts the current method of distributing the feeds within Building 990.

1.1.1.4 Training Analysis and Feedback (TAF) Avid Interplay Workstations

The TAF Avid Workstations are running on Dell 5400 chassis, which were modified to specifications provided by Avid to run the Interplay software. When the majority of the thick clients in the Core Instrumentation System were replaced with thin clients in 2013 by the CPM Technology Refresh effort, the TAF Avid Workstations were created from existing thick client workstations. The current TAF Avid Workstations were installed in 2009.

1.1.2 Existing VVMC

1.1.2.1 Microwave Backhaul

The VVMC is a Troll microwave system that is a secure, bidirectional, transmit and receive RF link featuring air-to-ground tracking and control systems used to gather, disseminate and process voice, video and data. The system currently operates in the 7.1 to 7.45 GHz frequency range. The main control station is located in Building 990, Room 188 in the Real Time video editing department. This control station operates RF Link equipment located on two remote sites, Tiefort and Granite Mountains, via the FON. At each of these remote sites there are 6 microwave dish assemblies mounted with pan-tilt assemblies on the main towers. The point-to-point digital microwave system was originally installed in 2009 and is nearing end-of-life.

1.1.3 RCC

1.1.3.1 WiMAX Trailers

The Portable Universal Trailers, also known as (aka) WiMAX Trailers, are instrumented trailers equipped with WiMAX transmitters and head end equipment. There are three (3) WiMAX trailers that provide a mobile data link via fiber optic networks to connect the down range FOB TOCs to the NTC Operations Group 52ID network. These trailers are equipped with RF Data transceiver sets that allow for covering distances that are beyond the Ethernet cable capability to facilitate extended local distribution within the FOB TOCs. These RF Data Transceivers are capable of Point to Multi Point and Point to Point WiMAX based feeds. The head end equipment and the RF WiMAX equipment are at end of life.

2.0 APPLICABLE DOCUMENTS

The following documents of issue shown on the document summary list form a part of this SOW to the extent specified herein. In the event of a conflict between documents referenced herein (section 3) and the contents of this SOW (sections 4 and 5), the contents of the SOW shall be the governing requirement.

2.1 Department of Defense Specifications

2.2 Availability of Department of Defense Specifications

Copies are available on the WWW at URL: http://assist.daps.dla.mil/quicksearch

2.3 Department of Defense Standards

MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-31000	Technical Data Packages
GEIA-STD-0007-A	Logistics Product Data

2.4 Availability of Department of Defense Standards

Copies are available on the WWW at URL: http://assist.daps.dla.mil/quicksearch/

2.5 Department of Defense Directives

DODD 8570.01	Information Assurance (IA) Training, Certification, and Workforce Management

2.6 Availability of Department of Defense Directives

Copies are available on the WWW at URL: http://www.dtic.mil/whs/directives/

2.7 Department of Defense Instructions

DODI 8510.01	DOD Information Assurance Certification and Accreditation Process (DIACAP)

2.8 Availability of Department of Instructions

Copies are available on the WWW at URL: http://www.dtic.mil/whs/directives/

2.9 Other Government Documents, Drawings, and Publications

AR 380.5	Marking and Labeling

Copies are available on the WWW at URL http://www.apd.army.mil/pdffiles/r380_5.pdf

AR 25-2 Information Assurance

Copies are available on the WWW at URL http://www.apd.army.mil/pdffiles/r25_2.pdf

AR 25-2 BBP 08-CO-M-0001, Information Technology Contingency Plans and Testing.

Copies of the above documents are available at PEO STRI, ATTN: Frank Lumley, 12350 Research Parkway, Orlando, FL 32826-3276

2.10 Availability of Other Government Documents and Publications

PEO STRI BAM PEOSTRI Basic Accreditation Manual

Copies of the above documents are available at PEO STRI, ATTN: SFAE-STRI-KOL, 12350 Research Parkway, Orlando, FL 32826-3276

3.0 REQUIREMENTS

3.1 Technology Refresh

The contractor shall provide all required software and hardware, installation, and configuration efforts to technology refresh the existing VVCEC consisting of Avid Servers, Real Time Avid Workstations, CCTV Equipment, Storage Area Networks (SANs) and Training Analysis Feedback (TAF) Avid Workstations, as well as technology refresh of the existing VVMC consisting of the microwave backhaul system equipment and WiMAX trailer equipment.

Prior to purchasing the equipment, the contractor shall complete the System Verification Review. Government approval is required prior to ordering the equipment.

The project actions associated with this effort cannot interfere with NTC training; therefore, the contractor shall consider the impact of having to work around the training rotation schedule and the limited availability of NTC assets to support this project when preparing the technical approach.

3.1.1 VVCEC

3.1.1.1 Audio and Video Servers

The contractor shall perform technology refreshment of the existing Avid Servers and associated equipment, located in Room 189 of Building 990. The replacement servers and associated equipment shall be compatible and interoperable with the existing Avid Airspeeds, which were replaced in 2014, and Avid Infinitely Scalable Intelligent Storage (ISIS) System. The Avid Servers and associated equipment requiring replacement are listed in Appendix C, Table 1: Current Avid Servers and Associated Equipment. The operating system software for the replacement Avid Servers shall be Windows Server 2008 R2 Army Gold Master (AGM). The operating system software for the replacement of workstations or non-server components shall be Windows 7 AGM.

The Avid software for the Avid Audio and Video servers, except for the operating systems, will be supplied by Avid (at no cost), under the current licensing agreement the PM CTIS Post Deployment Software Support has with Avid.

3.1.1.2 Avid ISIS System

The contractor shall deliver an additional 128 Terabyte (TB) of storage to the current Avid ISIS System, which currently has 224 TB of storage.

3.1.1.3 VVCEC Editing Suite

The contractor shall perform technology refreshment of the existing VVCEC Editing Suite, located in Room 188 of Building 990. The replacement VVCEC Editing Suite shall be compatible and interoperable with the existing Avid Airspeeds and Avid ISIS System. The existing VVCEC Editing Suite consists of digital editing stations, AAR preparation stations and duplicating stations. The VVCEC Editing Suite equipment requiring technology refreshment is listed in Appendix C, Table 2: Current VVCEC Editing Suite. The operating system software for the replacement VVCEC Editing Suite workstations shall be Windows 7 AGM.

3.1.1.3.1 Blu-ray Player/Recorder, Recorders, Video, Dual, with Removable Hard Drive (HD) and Omega Hard Disk Drive (HDD)

The contractor shall replace the two Recorders, DVD Panasonic; one Recorder; DVD Phillips with tuner and built in hard drive and three Recorders, DVD Sony listed in Table 2 with six Blu-Ray Disc & HDD Recorders with High-Definition Serial Digital Interface (HD-SDI) units, or equivalent. Equivalent characteristics are listed in Appendix B.

The contractor shall increase the number of Recorders, Video, Dual, with Removable HD in Table 2 from eight to thirteen and replace them with OMEGA dual Channel High Definition/Standard Definition (HD/SD) Digital Video Recorder, or equivalent. Equivalent characteristics are listed in Appendix B. Four of the additional Recorders, Video, Dual, with Removable HD support playback during After Action Reviews (AARs) in the two Fixed AAR theaters in Building 990, one Live Fire (LF) theater and one National Urban Warfare Component (NUWC) theater. One additional Recorder, Video, Dual, with Removable HD will support the Command and Control LF facility. The five additional Recorders, Video, Dual, with Removable HD are required to be replaced at the same time as the VVCEC Recorders, Video, Dual, with Removable HD to insure that the theaters and the VVCEC Editing Suite remain compatible.

The contractor shall deliver twenty nine Omega external hard drives (HDD), or equivalent, to the VVCEC Editing Suite, which are not contained in Table 2. These HDDs will support the TAF analysts and are required to be replaced at the same time as the VVCEC Recorders, Video, Dual, with Removable HD to insure that the TAFs and the VVCEC Editing Suite remain compatible.

3.1.1.3.2 Video Preview System

The contractor shall add a preview system to the current VVCEC Editing Suite to provide the ability to view incoming video products for quality control as the video products go into the ISIS System. The feeds for display shall be provided by the CCTV system. The preview system shall be capable of displaying a minimum of 28 feeds simultaneously. The preview monitor shall be a 62 – 65 inch, wall mounted, LED screen.

3.1.1.4 TAF Avid Workstations

The contractor shall perform technology refreshment of the existing TAF Avid Workstations, located in the twelve TAF rooms in Bldg. 990. The replacement TAF Avid Workstations shall be configured to enable running of Avid software. The TAF Avid Workstations requiring technology refreshment are listed in Appendix C, Table 3: Current TAF Avid Workstations. The operating system software for the replacement TAF Avid Workstations shall be Windows 7 AGM.

3.1.2 CCTV Distribution Equipment

The contractor shall perform technology refreshment of the existing CCTV distribution equipment located in multiple rooms throughout Building 990 and 988. The contractor shall replace the current CCTV RF

based distribution system with an Internet Protocol (IP) based system. The CCTV distribution equipment requiring technology refreshment is listed in Appendix C, Table 4: Current CCTV Distribution Equipment. Since this equipment list in Table 4 is for the CCTV RF based distribution system, a large quantity of the components will be replaced by the CCTV IP based system.

For a description of the CCTV connections and the viewing channels contained in the CCTV, refer to Section 2.1.3 CCTV. Also, see Appendix A, Figure 1: B990 CCTV Diagram - Channel Inputs and Outputs, which depicts the current channels being ingested and combined for distribution in the current CCTV system and Figure 2: CCTV Distribution, which depicts the current method of distributing the CCTV feeds within Building 990 and 988.

3.1.2.1 Blu-Ray Player/Recorder

The contractor shall replace the two Toshiba DVDR with tuner, six Phillips DVDR with tuner, one Sony DVDR with tuner and one Sony Receiver listed in Table 4 with ten Blu-Ray Disc & HDD Recorders with HD-SDI units, or equivalent. Equivalent characteristics are listed in Appendix B.

The contractor shall deliver an additional four Blu-Ray Disc & HDD Recorders with HD-SDI units, or equivalent. Equivalent characteristics are listed in Appendix B. The additional four Blu-Ray Disc & HDD Recorders with HD-SDI units are not listed in Table 4: Current CCTV Distribution Equipment. These four Blu-Ray Disc & HDD Recorders with HD-SDI units are to be installed as follows: two in the Fixed AAR theaters in Building 990, one in the Live Fire (LF) Theater and one in the National Urban Warfare Component (NUWC) Theater. The four Blu-Ray Disc & HDD Recorders with HD-SDI units for the theaters are required to be replaced at the same time as the VVCEC and CCTV Blu-Ray Disc & HDD Recorders with HD-SDI units to insure that the theaters and the VVCEC Editing Suite and CCTV remain compatible.

3.1.2.2 CCTV Set Top Boxes

The contractor shall replace the eleven Panasonic DVD Players with tuner, listed in Table 4, with eleven Set Top Boxes. Because the CCTV is going to an IP based system, the contractor shall deliver an additional 119 Set Top Boxes to complete the CCTV distribution in Building 990 and 988.

3.1.3 VVMC

3.1.3.1 Microwave Backhaul System

The contractor shall perform technology refreshment of the existing microwave backhaul system, located on Tiefort and Granite Mountains and on each of the three Mobile After Action Review vans and on each of the eight Mobile Video Units. The microwave backhaul equipment requiring technology refreshment is listed in Appendix C, Table 5: Current Microwave Backhaul System.

3.1.4 RCC

3.1.4.1 WiMAX Trailers

The contractor shall perform technology refreshment of the existing WiMAX equipment located in the three Portable Universal Trailers, (aka) WiMAX Trailers. The WiMAX equipment requiring technology refreshment is listed in Appendix C, Table 6: Current WiMAX Equipment. The contractor shall replace the current Rotator Motor for the WiMAX antenna, Rotator Control, and Rotator Power Supply with a Pan/Tilt mechanism and its associated control and power supply.

3.2 Program Management

The contractor shall maintain program management and administrative support to ensure the requirements of this SOW are successfully implemented. The contractor shall provide a monthly status report regarding program status and accomplishments, upcoming activities, identified issues and their planned or actual resolution, a top level program schedule or any other items that should be brought to Government attention.

DI-MGMT-80227 Contractor's Progress Status and Management Report

3.2.1 Integrated Master Schedule (IMS)

The Contractor shall develop an IMS, no later than System Verification Review, which accurately portrays the sequence and relationship of activities defining the total program. The Contractor shall develop, implement, manage to, update, and maintain the contract IMS throughout the life of the program. All contract schedule information delivered or presented at program reviews shall originate from the IMS and shall contain all critical events and exit criteria, accomplishments, predecessor and successor events, and their dependencies. The IMS shall address total program activities including activities performed by major subcontractors. The IMS shall be implemented on a computer based program management control system which utilizes critical path method network analysis, accepts parametric data input, and can be utilized to determine a probabilistic estimate of the program schedules for reporting project progress. The network activities time data shall be updated to reflect accomplished activities and any changes in activity time estimates. The Contractor shall conduct critical path analysis of the tasks and identify problem areas and corrective actions required to eliminate or reduce schedule impacts.

DI-MGMT-81861 Integrated Program Management Report (IPMR): IMS only

3.3 Computer Hardware, Enterprise Software Solutions (CHESS) Program

The contractor shall comply with the Army's Computer Hardware, Enterprise Software Solutions (CHESS) program. Under PEO EIS, CHESS is the mandatory source for commercial IT purchases. CHESS contracts provide IT products and services that comply with NETCOM, Army and DoD policy and standards. Purchasers of commercial hardware and software must satisfy their IT requirements by utilizing CHESS contracts and DoD Enterprise Software Initiative agreements first, regardless of dollar value. Any purchase made outside of CHESS contracts requires a waiver. A complete list of CHESS contracts and the on-line waiver process can be found at https://chess.army.mil.

3.4 System Verification Review (SVR)

The contractor shall perform a System Verification Review (SVR), within two (2) months after contract award, to ensure that the system can proceed into procurement and deployment within cost, schedule, risk, and other system constraints. The SVR will assess the system functionality, and determine if the system meets the functional requirements of the existing system. The SVR will establish and verify the final product performance. The results of the SVR for the VVCEC and VVMC Systems life cycle replacement shall be documented in the meeting minutes. Attendees for the SVR, at a minimum, shall include the contractor, any subcontractors, and the Government (both NTC and PEO STRI). The purpose of the SVR is to present the following:

The SVR shall include:

a. Results of internal technical design reviews.
b. Results of site survey(s), if conducted.
c. Results of technical interchange meetings (local and remote).
d. Required software integration/modification, if software is required.

e. Review of System Documentation specified for delivery.
f. A list of the proposed replacement equipment to include: Manufacturer, Manufacturer Part Number, Nomenclature, Quantity, and a brief description of proposed equipment.

The SVR shall ensure:

a. Each subcomponent is sufficiently mature to meet Technology Readiness Level 9.
b. The program schedule is executable within the anticipated cost and technical risks.
c. Program risks are known and manageable.
d. Electrical Design satisfies electrical design standards, best practices, and safety requirements.
e. Design documentation reflects that the system requirements are understood.
f. Component selections versus logistical tradeoffs have been conducted, to include results of the logistics support analysis.
g. Life Cycle Cost estimates has been addressed to the maximum extent possible for a Final Design.
h. The program is properly staffed.
i. Procurement processes are in place to procure component hardware and software (if applicable).

3.5 Information Assurance

The contractor shall ensure Information Assurance (IA) impacts of life cycle recommendations are considered and that IA is integrated into the engineering and management processes and ensure operational systems security in accordance with (IAW) DODD 8500.1E, DODI 8500.2, DODI 8510.01(DIACAP), AR 25-2, and the PEOSTRI Basic Accreditation Manual (BAM). All computers, equipment, and software delivered shall meet minimum requirements to facilitate meeting DOD Information Assurance Security standards.

The contractor shall deliver the system in an acceptable state of Information Assurance Vulnerability Assessment (IAVA) and Security Technical Implementation Guide (STIG) compliance. The STIGs shall be implemented on all newly acquired IA and IA-enabled IT products. The STIGs to be implemented, but not limited to, are:

a. Operating Systems
b. Network Infrastructure
c. Firewalls
d. Application Security and Development
e. Database
f. Enclave

The contractor shall maintain IAVA & STIG compliance of the NTC IS baseline and provide software update patches to the Government, as required, on a quarterly basis through the life of the delivery order.

3.5.1 Information Assurance Contractor Training and Certification

1. The Contractor shall ensure that personnel accessing information systems have the proper and current information assurance certification to perform information assurance functions in accordance with DoD 8570.01-M, Information Assurance Workforce Improvement Program. The Contractor shall meet the applicable information assurance certification requirements, including:
   a. DoD-approved information assurance workforce certifications appropriate for each category and level as listed in the current version of DoD 8570.01-M; and
   b. Appropriate operating system certification for information assurance technical positions as required by DoD 8570.01-M.

2. Upon request by the Government, the Contractor shall provide documentation supporting the information assurance certification status of personnel performing information assurance functions.
3. Contractor personnel who do not have proper and current certifications shall be denied access to DoD information systems for the purpose of performing information assurance functions.

3.5.2 IA Documentation

The contractor shall update the existing NTC-IS IA documentation (Information Security Plan (ISP), Hardware (HW) and Software (SW) lists, or develop and deliver new documents required by DIACAP in accordance with the PEO STRI BAM.

DI-MISC-80711A Scientific and Technical Reports (IA)

3.5.3 Verification

After the contractor verifies that the system is configured in a certifiable state using Army approved IA tools and the contractor has verified the protective measures appropriately address each specific security requirement, the NTC Information Assurance Manager will conduct an IA scan of the system to verify that the system is in a certifiable state and that the protective measures appropriately address each specific security requirement.

3.5.4 Security Controls

After Government Acceptance Test the delivered components shall have successfully gone through a Configuration Change to the current Accreditation baseline meeting DoDI 8500.2 and AR 25-2 IA Controls. If changes to the accredited baseline are deemed to have an impact to the accreditation, modify an implemented security control, increase risk to the system, or field new IA enabled components; the change(s) shall go through a Delta Certification and Accreditation Process.

3.5.5 Certification and Accreditation

The contractor shall support the Government in maintaining the Certification and Accreditation (C&A) of the existing NTC IS including interfaces to the CTC-IS system in accordance with the DIACAP, and PEO STRI's BAM. The contractor shall address and implement the IA security requirements for the system based upon a Mission Assurance Category (MAC) Level III and a Confidentiality Level of Secret for the classified enclave and a Confidentiality Level of Sensitive for the unclassified enclave. For the period of performance of this contract, the contractor shall support the Government in maintaining IA compliance.

3.6 Safety Assessment and Health Hazard Analysis

The contractor shall provide a Safety Assessment Report (SAR). The contractor shall ensure that the NTC Avid Servers, Avid ISIS, VVCEC Editing Suite, Video Preview System, CCTV Distribution System, CCTV set top boxes, and Microwave Backhaul System life cycle replacement components are safe for personnel to transport, install, operate, maintain, support and dispose of. The contractor shall identify hazards, assess the risk, track hazards, mitigate hazards, verify corrective actions have been implemented and verify hazards have been eliminated or reduced to acceptable risk levels.

DI-SAFT-80102B Safety Assessment Report (SAR)

3.7 Operator and Maintenance Manuals

The contractor shall supply Commercial Off-the-Shelf (COTS) Operator's Manuals that provide instructions suitable for use by the intended audience of the systems. The COTS Operator's Manual shall also include operator maintenance tasks such as preventive maintenance checks and services, inspection, lubrication,

adjustment, and operator level repair and replacement tasks as needed. The contractor shall supply COTS Maintenance Manuals that identify, and document maintenance tasks to maintain the systems in an operational condition. The COTS Maintenance Manuals shall identify all required spare parts, consumables, tools, and test/support equipment associated with each task and identify the level of maintenance at which each task shall be performed. The contractor shall prepare supplemental data in accordance with MIL-PRF-32216A evaluation forms. MIL-PRF-32216 Appendix A, B, and C will be used for the evaluation of all COTS OEM documentation. The contractor shall compile a soft copy of all COTS Operation, Installation, and Maintenance Manuals and provide on CD or DVD. A hard copy of all COTS Operation, Installation and Maintenance Manuals shall be placed in tabbed binders with table of contents, indexed if necessary.

DI-TMSS-80527C Commercial Off-the-Shelf (COTS) manuals

3.8 Test Readiness Review (TRR)

The contractor shall conduct a technical review to ensure the product is ready to proceed to verification and execution of the Test Procedures. The TRR will assess test objectives, test methods and procedures, scope of the test, and locations of test events. The TRR will confirm that resources are identified and coordinated. The contractor shall schedule the TRR to provide sufficient time to correct issues prior to execution of the GAT.

3.9 Government Acceptance Testing (GAT)

The contractor shall conduct a Government-witnessed acceptance test of the life cycle replacement systems installed at the NTC to include the; Avid Servers, Avid ISIS, VVCEC Editing Suite, Video Preview System, CCTV Distribution System, CCTV set top boxes, and Microwave Backhaul System to verify that the delivered capability meets the life cycle replacement requirements for the respective equipment. The contractor shall develop test procedures for the GAT. All of test procedures shall be approved by the Government prior to beginning government acceptance testing. The contractor shall document the results of the GAT in a test report.

DI-NDTI-80603A Test procedures

DI-NDTI-80809B Test reports

3.10 Physical Configuration Audit (PCA)

After the completion of the GAT, the contractor shall plan and conduct a PCA to inventory the replaced equipment with the PM CTIS Government representative and NTC Property Book Representative and review the Product Drawings and Associated Lists (PDAL) and the Item Unique Identification (IUID) tags. The results of the PCA shall be documented.

DI-MISC-80711A Scientific and Technical Reports (PCA Report)

3.11 Decommissioning and Disposition

The contractor shall provide a schedule and inventory of all equipment being decommissioned and disposed of at SVR. The contractor in coordination with the Government shall coordinate the schedule and inventory with the Operations Group Property Book Officer for hand receipt control of property being removed.

The contractor shall decommission and dispose of the existing Avid Servers, VVCEC Editing Suite, CCTV Distribution System, and CCTV set top boxes, Microwave Backhaul System and WiMAX Backhaul System in coordination with the PEO-STRI Customer Service Representative (CSR) per Property Disposition Orders (PDO). Removed equipment shall be stored in a secure location, tagged and marked IAW property

disposition guidelines until such time as disposal. The contractor shall provide a final receipt of disposal as directed with the Property Disposition Orders prior to the end of period of performance and DD250 sign off.

DI-ILSS-81251 Existing Equipment Inventory Report

3.12 Item Unique Identification (IUID) of Tangible Items

The contractor shall coordinate with PEO STRI and identify IUID type, the IUID to be used, and items requiring IUID, including embedded subassemblies, components and parts. IUID means a set of data marked on items that is globally unique, unambiguous, and robust enough to ensure data information quality throughout life and to support multi-faceted business applications and users. The format of the IUID labels shall be IAW MIL-STD-130. These requirements apply to developed and commercial items. The contractor shall provide unique IUID labels, or a DoD recognized IUID equivalent for all identified items delivered. The contractor shall submit required IUID data to the IUID central registry. IUID marking of items shall be both machine readable and human readable in accordance with MIL-STD-130.

DI-MGMT-81804 Unique Identification (IUID) Marking and Verification Report

3.13 Warranty

The contractor shall deliver a standard commercial replacement warranty associated with each component of the replacement equipment. The contractor shall provide all associated warranty information for the replacement equipment of the VVCEC, VVMC and the WiMAX components of the RCC equipment to include the start and end dates of the warranty and the point of contact information for the warranty to include: name, company, telephone number, and email address.

3.14 Logistics Support Analysis

3.14.1 Supportability

The contractor shall ensure supportability of the systems through planning, implementation, and verification of materiel and services to meet operational requirements. Readiness, availability, and supportability shall be the primary design factors. Results of the logistics support analysis shall be presented at SVR.

3.14.2 Sparing

The contractor shall provide sparing of equipment as stated on Tables 1 through 5 and any spares identified in the COTS Maintenance Manuals.

3.14.3 Technical Data Package (TDP):

The contractor shall replace or update existing documentation with documentation that reflects the replaced equipment for the NTC-IS Avid Servers, Avid ISIS, VVCEC Editing Suite, Video Preview System, CCTV Distribution System, CCTV set top boxes, Microwave Backhaul System and WiMAX trailers. If there is no existing documentation, the contractor shall produce and maintain for the duration of the program a TDP that accurately and completely depicts the life cycle replaced site equipment. For all elements of this program and for modifications to commercial and non-developmental program elements, the contractor shall develop, produce, and maintain a production level TDP IAW MIL-STD-31000 that provides design, engineering, manufacturing and quality assurance requirements information sufficient to procure or manufacture an interchangeable item that duplicated the physical and performance characteristics of the original product, without additional design engineering effort or recourse to the original design activity. For existing commercial and non-developmental program elements, the contractor shall develop, produce, and maintain commercial documentation IAW MIL-STD-31000 containing the engineering, and manufacturing information necessary to assemble and integrate these items into the remote sites and verify performance.

The contractor shall utilize existing commercial drawings, documentation and specifications where possible. The contractor shall verify, validate, and maintain a TDP that includes all required documents, drawings, and information required to support and maintain the NTC Avid Servers, Avid ISIS, VVCEC Editing Suite, Video Preview System, CCTV Distribution System, CCTV set top boxes, Microwave Backhaul System and WiMAX trailers. The TDP will include, at a minimum, the following:

1. Product drawings and associated lists (PDAL) (DI-SESS-81000D)
2. Technical Data Package Index (TDP) (DI-EGDS-80918)
3. Commercial drawings and associated lists (DI-SESS-81003D)
4. Logistics Product Data (DI-SESS-81758) consisting of:
    a. Provisioning Parts List
    b. Recommended Initial Spares/Repair Parts List
    c. Materiel Components List
5. Logistics Product Data Summaries (DI-SESS-81759)

The TDP shall be verified, kept current, and shall be available to the Government for review at any time.

3.15 Packing, and Transporting.

The contractor shall be responsible for the packing and transporting all equipment to each installation site.

3.16 Contractor Training

3.16.1 AT Level I Training

All contractor employees, to include subcontractor employees, requiring access to Army installations, facilities and controlled access areas shall complete AT Level I awareness training within 90 calendar days after contract award. The contractor shall submit certificates of completion for each affected contractor employee and subcontractor employee, to the COR or to the contracting officer, if a COR is not assigned, within 15 calendar days after completion of training by all employees and subcontractor personnel. AT Level I awareness training is available at the following website: https://atlevel1.dtic.mil/at.

3.16.2 Access and General Protection/Security Policy and Procedures

All contractor and all associated sub-contractors employees shall comply with applicable installation, facility and area commander installation/facility access and local security policies and procedures (provided by government representative). The contractor shall also provide all information required for background checks to meet installation access requirements to be accomplished by installation Provost Marshal Office, Director of Emergency Services or Security Office. All contractor workforces must comply with all personal identity verification requirements as directed by DOD, HQDA and/or local policy. In addition to the changes otherwise authorized by the changes clause of this contract, should the Force Protection Condition (FPCON) at any individual facility or installation change, the Government may require changes in contractor security matters or processes.

3.17 Contractor Manpower Reporting Application (CMRA)

The contractor shall report ALL contractor labor hours (including subcontractor labor hours) required for performance of services under this contract for the Power Element Life Cycle Replacement program via a secure data collection site. The contractor is required to completely fill in all required data fields using the following web address: http://www.ecmra.mil/. Reporting inputs will be for labor executed during the period of performance during each Government Fiscal Year (FY) which runs October 1 through 30 September. While inputs may be reported any time during the FY, all data shall be reported no later than

October 31 of each calendar year. Contractors can find User Guides, Frequently Asked Questions and may direct questions to the help desk at http://www.ecmra.mil/.

APPENDIX A: CCTV DISTRIBUTION

Figure 1: B990 CCTV Diagram - Channel Inputs and Outputs

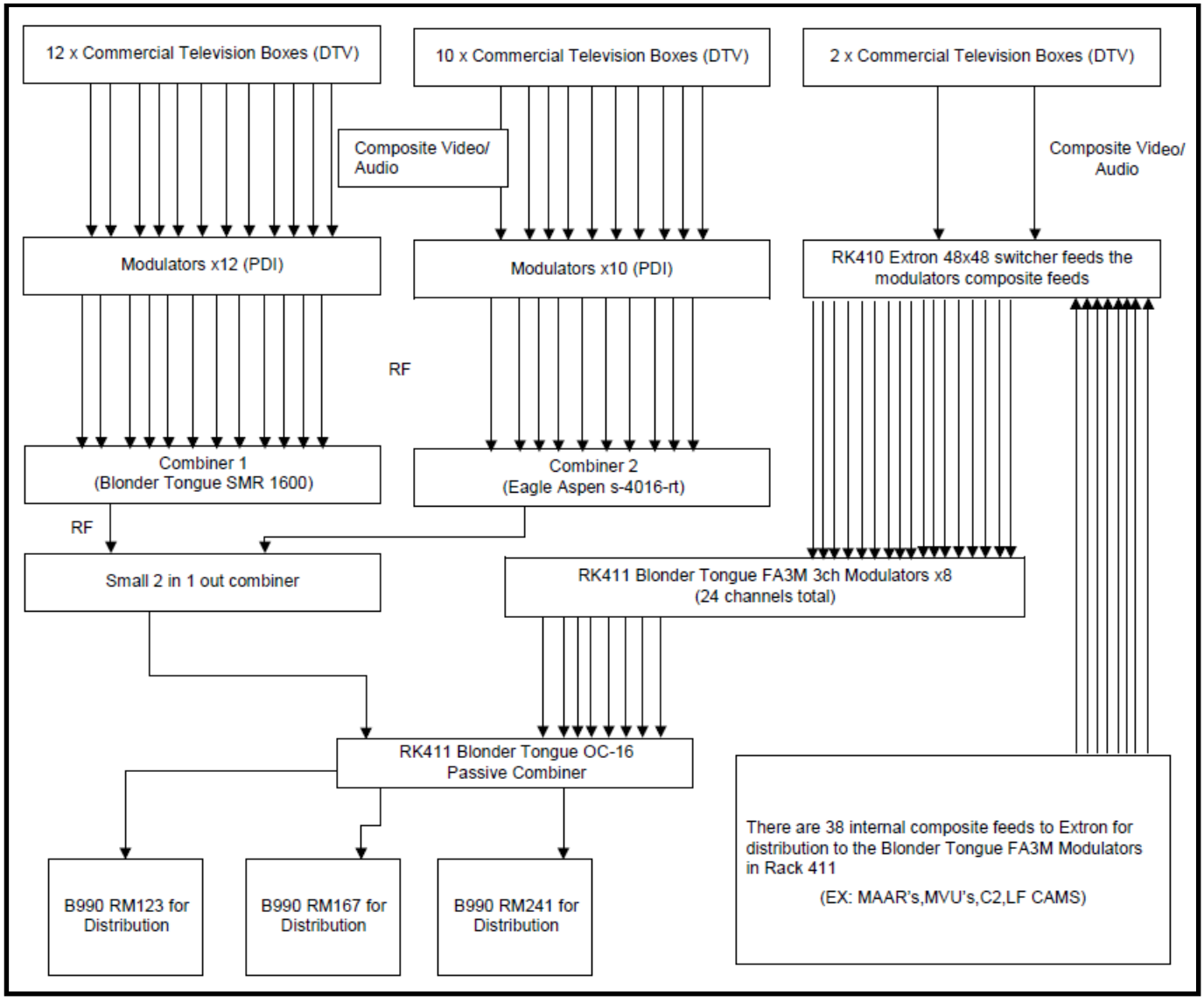
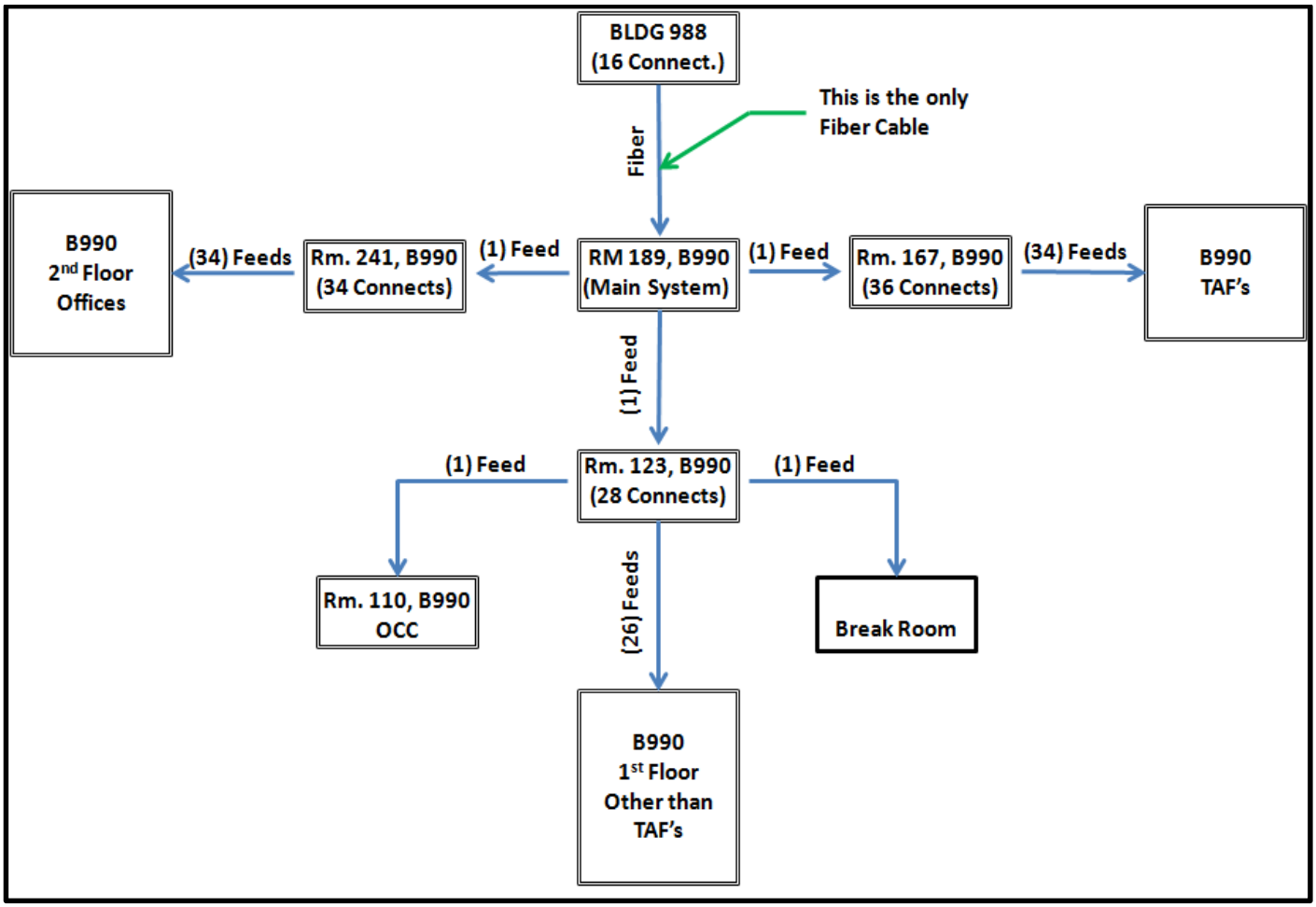


Figure 2: CCTV Distribution



APPENDIX B: VVCEC AND VVMC EQUIVALENT EQUIPMENT CHARACTERISTICS

1. OMEGA dual Channel HD/SD Digital Video Recorder (DVR)

The Fast Forward Video Dual Channel Omega HD Recorder (2.5" SATA Drives) is a broadcast quality HD video recorder and features dual-channel recording with a maximum storage capacity of 500 GB per channel. Using wavelet-based JPEG2000 codec, the device can record high-definition video at up to 100 Mbit/s. The 2-channel unit features removable and hot-swappable 2.5" SATA drives, and Genlock technology syncs 2 channels. Featured SATA / USB ports allow for video download.

A front panel touch screen allows us to control the settings of the Omega HD Recorder. The recorder offers up to 8 hours of recording time and allows for simultaneous recording and playback. The HD recorder also offers dynamic tracking, discrete access to every frame, variable speed noise-free playback forward and reverse, chase lock, instant cueing, clip recall, and loop record.

Digital Inputs and Outputs	SD/HD-SDI
Standards	SMPTE 274M (1080i) SMPTE 296M (720p) SMPTE 347M (NTSC & PAL) SMPTE 334M-1 (closed caption) SMPTE 334M-2 (closed caption) SMPTE 12M-2-2008 (ancillary time code)
Genlock Input	60 Hz: Black burst SMPTE 170 M 50 Hz: ITU-R BT.470; 75 ohm
Supported Resolutions	1080i/60/59.94/50/24 (1920 x 1080/60/59.94/50/2:1 Interlace) 720p/60/59.94/50 (1280 x 720/60/59.94/50/Progressive) 720p/23.98/24.00 NTSC (720 x 486/59.94/2:1 Interlace) PAL (720 x 576/50/2:1 Interlace) Supports 4:3 or 16:9 aspect ratio
Connections	BNC 75 ohms
Digital Input/Output	8 Channels embedded HD-SDI 4 Channels embedded SD-SDI 4 Channels AES
Connections	BNC connectors unbalanced
Resolution	24 bits

Audio Channel	HD embedded 8 in/8 out SD embedded 4 in/4 out 4 channels AES/EBU (these replace embedded channels 1-4)
Sampling Rate	48 KHz
Analog Audio I/O	Stereo Balanced
Connections	XLR Connectors
Resolution	16 bits
Audio Channels	2 in 2 out (per video channel)
Dynamic Range	80 dB
Output Impedance	600 ohms
Sampling Rate	48 KHz
Maximum Hard Drives	1 per channel
Supported Hard Drives	2.5" SATA
Video Compression	Motion JPEG2000 QuickTime or Native Maximum Bit Rate: HD:100Mbit/s SD: 50Mbit/s
Dimensions (HxWxD)	3.5 x 17 x 14" (88.9 x 431.8 x 355.6 mm) 2RU
Power Consumption	125 Watts
Operating Temperature	32-140º F
Humidity	90% relative humidity with no visible condensation

2. Omega External Hard Drives

The **750GB HDD with Enclosure for Omega & Micron** from **Fast Forward Video** is designed specifically for use with FFV's Omega HD and Micron HD recorders. It provides around 12-13 hours of HD record time.

3. Blu-Ray Disc & HDD Recorder with HD-SDI

The **JVC SR-HD2500 Blu-Ray Disc & HDD Recorder with HD-SDI** is a combo deck that lets you burn HD Blu-ray discs and HD or SD DVDs without being connected to a PC. Featuring a 500GB hard disk drive for editing and duplicating, the deck can record internally or direct-to-Blu-ray / DVD from various inputs, even from live signals. A comprehensive set of connections, including HD-SDI, provide compatibility with most all media sources, like high-end cameras and switchers.

The unit records in HD but can downscale and burn to DVD in SD. Discs can be authored in BDMV (true Blu-ray authoring) or BDAV disc formats, with menus and with auto-start or repeat playback options. Multiple copies of each recording can easily be made via a built-in duplication function. The deck stores up to 24 hours of HD using dual-layer 50GB discs in AE mode and supports both BD-R and erasable BD-RE Blu-ray discs. Video formats supported are MPEG2TS, MPEG2PS, and H.264 AVC. Audio formats supported consist of Dolby Digital and LPCM.

The deck also allows convenient monitoring by SDI, HDMI, and component outputs. And another useful feature is the capacity to superimpose over the video burned -- whether onto Blu-ray or DVD -- the time-code or time and date embedded in an SDI signal.

Inputs	(1) SDI (1) Composite video (1) S-Video -- Y: 1.0 Vp-p, 75 Ω / C: 0.286 Vp-p, 75 Ω (1) Audio 2Vrms pin jack (1) IEEE1394: 4-pin for DV, HDV In (1) Remote: 3.5 mm jack (1) Serial command: RC-232C D-sub 9-pin (1) SD card slot for SDHC / SD card
Outputs	(1) SDI -- shares direct out / monitor out (1) SDI -- active loop-through (1) HDMI 19-pin type A (Deep Color, x.v.Color, Ver.1.3a) (1) USB 2.0 (1) Composite video (1) S-Video -- Y: 1.0 Vp-p, 75 Ω / C: 0.286 Vp-p, 75 Ω (1) Audio 2Vrms pin jack (1) Component video - Y: 1.0 Vp-p, 75 Ω / CB/CR, PB/PR: 0.7 Vp-p, 75 Ω
HDD Storage Capacity	500 GB
Video Recording	MPEG4 AVC/H.264, MPEG-2 TS, MPEG-2 PS JPEG (stills)

Audio Recording	Dolby Digital, Linear PCM, MPEG1 Layer2
Direct Recording	From AUX to BD/DVD: HD-SDI, SD-SDI, HDV (iLink), DV (iLink), S-Video / Video (L1)
Importable Data Format	Importable to HDD: AVCHD, HDV, DV, JPEG, BDAV, BDMV, DVD-Video/VR, Everio back-up disc, and MOV2 -- from the GY-HM700 or GY-HM100 series camcorder using HQ mode (35Mbp/s) and SP mode (25Mbp/s and 19Mbp/s)
Compatible Recordable Media	Blu-Ray Disc: BD-R (SL/DL), and BD-RE (SL/DL)3 -- not compatible with Ver. 1.0 (23GB) DVD: DVD-R (SL/DL), DVD-RW SD Card (for stills): SDHC, SD
Playable Media	Blu-Ray Disc: BD-Video, BD-R (SL/DL), BD-RE (SL/DL) DVD: DVD-Video, DVD-R (SL/DL), DVD-RW, DVD-RAM, DVD+R (SL/DL), +RW CD: CD, CD-R, CD-RW SD Card (Still/Video 4 -- playability depends on format and conditions): SDHC, SD
Power Requirement	AC 120 V, 60 Hz
Power Consumption	Power on: 41W Stand-by: 3W
Temperature	Operating: 41 to 95°F (5 to 35°C) Storage: -4 to 140°F (-20 to 60°C)
Operating Position	Horizontal
Dimensions	17.1 x 2.75 x 13.8" (43.4 x 7 x 35 cm)
Weight	11.2 lbs (5 kg)

APPENDIX C: EXISTING EQUIPMENT

Table 1: Current Avid Servers and Associated Equipment

Component	Model Number	Manufacturer	Qty in System	Spares	Total Qty
Avid Interplay Clustered Servers with RAID Array	7010-20004-02	Avid	1	0	1
Avid Interplay Look Up Server	7010-20340-01	Avid	2	0	2
Avid Interplay Media Indexer	7010-30024-01	Avid	2	0	2
Avid Interplay Capture Fault Tolerant Servers	7010-20340-01	Avid	2	0	2
Avid Primary Unity ISIS System Director	7010-30049-01	Avid	1	0	1
Avid Autofailover Unity ISIS System Director	7010-30050-01	Avid	1	0	1
16 Port KVM Switch	7010-04165-02	Avid	1	0	1
KVM 13' Cable	7070-03053-02	Avid	1	0	1
Avid Unity ISIS 2.0 spares kit	7010-30072-01	Avid	1	0	1

Table 2: Current VVCEC Editing Suite

Component	Current Model Number	Manufacturer	Qty in System	Spares	Total Qty
ProCon 1 Reader to 11 Writer CD/DVD Duplicator with 250 GB Hard Drive, FireWire and USB 2.0 Connector	PC-D-11250-RHD	Pro Con	1	0	1
DVD Duplicator 11 Bay	Premium Pro series	Microboards Technology	1	0	1
DVD Duplicator 6 Bay	QD-DVD-125	Microboards Technology	1	0	1
CD/DVD Shredder	240114	Alera Technologies	1	0	1
Laptop for Duplicators and Label Maker	Pro Book 4530s	Hewlett Packard	1	0	1
CD/DVD Label Maker	Bravo Pro	Primera	1	0	1
ANALYZER, AUD/VID SIGNAL, MULTI-FORMAT	TVM-950	Leitch/Harris	5	2	7
AVID Media Composer Adrenaline System		HP/AVID	1	0	1
COMPOSER, MEDIA, NITRIS DX, AVID	MC NITRIS	Avid	6	0	6
COMPUTER, WORKSTATION, Z400, HP, CAP ST1	Z400	HP	2	0	2
COMPUTER, WORKSTATION, Z800, HP	Z800	HP	7	0	7
Contour Design Shuttle pro V2	S-PROV2	Contour Design	7	0	7
DELL 17" MONITOR	E173FP6	Dell	1	0	1
HARD DRIVE, P2 CARD READER, PANA.	AJ-PCD20	Panasonic	5	1	6
HP 20" MONITOR, WIDE FLATSCREEN	L2045W	HP	1	0	1
JBL Linear spartial reference Bi amplified monitor	LSR4326P	JBL	6	0	6
MIXER, AUDIO, 8 CH. COMPACT, MACKIE	802-VLZ3	Mackie	5	4	9
MONITOR, 17", SD-SDI BNC LOOP -THRU, MARSHALL	M-LYNX-17SDI	Marshall	10	4	14
MONITOR, 19", FLAT PANEL, HP	HL1940T	HP	2	0	2
MONITOR, 21" LCD MULTIFORMAT SONY	LMD-212	Sony	1	0	1
MONITOR, LCD 2 X 8 " MARSHALL	V-R82DP-2C	Marshall	4	5	9
Monitor, Set, 2" X 8" LCD, Rackmountable	V-R82P-SDI	Marshall	1	1	2
Pro keyboard for media composer	Shuttle KeyBoard	Bella	7	0	7
RECORDER DVD, PANASONIC	DMR-ES15S	Panasonic	1	1	2
RECORDER, AG-HPG20 PORTABLE P2 CARD	AG-HPG20	Panasonic	1	0	1
RECORDER, DVD, PHILLIPS w/ Tuner and Built-In Hard Drive	DVDR3575H/37	Phillips	1	0	1
RECORDER, DVD, SONY	RDR-GX330	Sony	3	0	3
RECORDER, VIDEO,DUAL, W/REMOVABLE HD	OMEGA DECK	Fast forward video	6	2	8
SCAN, VIDEO-TO-COMPUTER , HIGH RESOLUTION, VSC5(	VSC500	Extron	6	1	7
Sony Mini DV Video Walkman	GVD-1000	Sony	5	3	8
Sony Multiformat Engine Unit for LMD monitors	MEU-WX2	Sony	1	0	1
2x STANDARD Dell Speakers		Dell	2	0	2
STANDARD KEYBOARD AND MOUSE		Dell	2	0	2
Switcher, A/V Theater Prog, Crosspoint, 300 84 HVA	CrossPoint 300 84 HVA	Crosspoint	3	0	3
Switcher, A/V Theater Prog, Crosspoint, 300 128 HVA	CROSSPOINT 450 PLUS	Crosspoint	2	0	2
WACOM Cintiq 24" HD MONITOR WITH DIGITAL PEN	DTK2400/K	WACOM	1	0	1
Software					
AVID Media Composer 6.5	Ver 6.5	Avid	7	0	7
AVID Interplay 2.7	Ver 2.7	Avid	22	0	22

Table 3: Current TAF Avid Workstations

Component	Curent Model Number	Manufacturer	Qty in System	Spares	Total Qty
TAF Avid Workstations (Dell workstations configured to run Avid software)	5400	Dell	20	2	22
Monitors for TAF Avid Workstations	E173FP6	Dell	20	2	22

Table 4: Current CCTV Distribution Equipment

Component	Model Number	Manufacturer	Qty in System	Spares	Total Qty
Spectrum Analyzer	2712	TEKTRONIX	1	0	1
Grassvalley Video Distribution amp.	096361-04A	Grassvalley	1	0	1
Grassvalley Audio Distribution amp.	096363-05	Grassvalley	1	0	1
Bose Speaker system	Acoustimass5	Bose	1	1	2
Videotek Audio Monitor	APM-200	Videotek	1	0	1
PANASONIC DVD PLAYER WITH TUNER	DMR-EZ28K	Panasonic	9	2	11
Toshiba DVDr with tuner	DR570	Toshiba	1	1	2
Phillips DVDR with tuner	DVDR 3575H	Phillips	4	2	6
Frequency Agile Modulator	FA1M-50-860	Blonder Tongue	1	0	1
Frequency Agile Modulator Triple Channel Unit	FA3M Series	Blonder Tongue	8	0	8
Frequency Agile Modulator	FA3M-50-860	Blonder Tongue	1	0	1
Fiber Optic Transmitter, Single-mode,48-860 MHz	FIBT-S3A	Blonder Tongue	2	0	2
Fiber Optic Receiver/RF Distribution Amplifier	FRRA-S4A-860-43P	Blonder Tongue	2	0	2
Extron 48x Audio switcher	MAV+4848SA	Extron	1	0	1
Extron 48x Video switcher	MAV+4848V	Extron	1	0	1
Extron 32x Audio/Video switcher	MAV3232AV	Extron	1	1	2
Passive Combiner, 5-1000 MHz	OC-16PORT	Blonder Tongue	1	0	1
Laptop used for cctv guide with MS Office	probook 4530s	HP	1	0	1
Rack Mounted Distribution Amplifier	RMDA-860-30P	Blonder Tongue	3	0	3
Sony DVDR with tuner	RDRGx330	Sony	1	0	1
1GHZ SPLITTER 1 IN X 16 OUT (9 OUTPUTS USED)	SP-16C	ASKA	1	0	1
Sony Receiver	STR-DE597	Sony	1	0	1
Tektronix Colorbar Generator	TSG130A	Tektronix	1	0	1
Grandtec TV tuner	TUN-2000	Grantec	1	0	1
Waveform Vector scope	TVM-950	Harris/Leitch	2	1	3
Marshall 17" Monitor	V-R171P	Marshall	1	2	3
Marshall 17" Monitor	V-R171P-HAD	Marshall	1	0	1
Marshall Triple 5" Monitor	v-R53P	Marshall	1	1	2
Marshall Dual QC mon.	V-R82DP-ZC	Marshall	1	0	1
SCAN, VIDEO-TO-COMPUTER , HIGH RESOLUTION, VSC700	VSC700	Extron	1	1	2
Quad processor	WJ-MS424	Panasonic	4	1	5
COMPUTER, SERVER,256mb XP PRO for Extron 48x Audio Switcher MAV+4848SA and MAV+4848V above	RMS-6113B	BSI BROADAX SYSTEMS INC	1	0	1
Keyboard standard		Dell	1	1	2
ALTEC LANSING DESKTOP SPEAKERS	VS4121	ALTEC LANSING	1	0	1
PLASMA, 50" DISPLAY, SAMSUNG (Wall Mount)	PPM50M6HBX/XAA	Samsung	2	0	2

Table 5: Current Microwave Backhaul System

Component	Curent Model Number	Manufacturer	Qty in System	Spares	Total Qty
SERVER, REMOTE PWR MANAGER SENTRY	4805 XLS-16	Sentry Hardware	2	1	3
ELTEX VALERE DC POWER CONVERTER (-48VDC RECTIFIER)	CP3D-ANL-VV	Valerie	13	1	14
ONYX S5 INVERTER	SLI-48-115	Onyx	2	0	2
TROLL PASSIVE SURGE SUPPRESSOR	(17V) 45HQ0	Troll Systems	12	1	13
NORTH STAR 12 VOLT BATTERY BACKUP SYSTEM	NSB 90 FT	North Star	2	0	2
HARRIS PROCESSING SIGNAL UNIT, NON-PROTECTED (TRUE POINT 500	201-902505-501	Harris Corporation	23	1	24
TROLL REMOTE SITE CONTROLLER	TROLL S750-BAS	Troll Systems	15	6	21
TOUCHSTAR 750 BAS	TROLL X750-BAS	Troll Systems	8	4	12
HARRIS- RFU, OUTDOOR MOUNTED, STD POWER (TRUE POINT 5000)	201-903440-001	Harris Corporation	23	4	27
ANDREW ANTENNA, DUAL POLARIZED	VHLPX2-7W-6GR	Andrew Corporation	23	6	29
MOOG QUICKSET - UNIT, PAN AND TILT, ANALOG, 115V	QPT130	Moog QuickSet	23	5	28
CONTROL, GPS, MAGNETOMETER	CP-GPS-MAG-01	Troll Systems	11	3	14
Dell Computer	Precision 490	Dell	1	0	1
TROLL SOFTWARE VER. TOUCH STAR 1.0.0.3	VER. TOUCH STAR 1.0.0.3	Troll Systems	1	0	1

Table 6: Current WiMAX Equipment

Components	Current Model Number	Manufacturer	Qty in System	Spares	Total Qty
Secure Networks 48 Port Switch	N826/1H582-51	Enterasys	3	0	3
WiMAX Point to Multi Point (PMP) System	AN-50E	Redline	3	0	3
WiMAXTransceiver	T-58e	Redline	3	0	3
5.4GHz - 5.9/GHz, Omni Directional Antenna	Not Found	Unknown	3	0	3
Point to Point (PTP), WiMAX Transceiver	AN-80i	Redline	6	0	6
Point to Point (PTP) WiMAX 5.8 GHz Directional Panel Antenna	48-00021-01	Redline	6	0	6
Outdoor Air Conditioning Unit	57915.541	Dometic Duo Therm	3	0	3
Telescoping Mast 30 Ft., 50 lb capacity	FM 30-50	Floatograph	3	0	3
Mast Electric Winch Motor: 1.5 fpm,3000 lb.,12VDC	5AA17	Dayton	3	0	3
Generator: 6 Kw / 120 AC / 50 amp / Diesel	6HDKAH-1044K	Onan	3	0	3
Rotator Motor for WiMAX Antenna	PST-641	Prosistel	3	0	3
Rotator Control	D Controller	Prosistel	3	0	3
Rotator Power Supply	DLS-15 Series M	IOTA	3	0	3
Extron bulkhead Panel	AAP-104	Extron Electronics	6	0	6
RJ 45 female to female bulkhead barrel	70-100-14	Extron Electronics	24	6	30
Safety Switch (Trailer Power)	D222N	Square D	3	0	3